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No.

In The Supreme Court of the United States

October Term, 1985

Valmet Oy and TVW Papermachines, Inc.

Petitioners,

Beloit Corporation,

Respondent

On Certiorari to the United States Court of Appeals For the Federal Circuit

PETITION FOR WRIT OF CERTIORARI AND APPENDIX

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QUESTIONS PRESENTED

1. Did the court of appeals exceed its appellate authority when, after setting aside findings of fact as based on an erroneous rule of law and reversing a holding of non-infringement, it found infringement instead of remanding to the trier of fact for fact findings in light of the correct rule of law?

2. Was not the trier of fact required to refer to the specification and drawings to interpret an ambiguous word in a patent claim, and did not the court of appeals err when it reversed the trier of fact for doing so?

3. Did the court of appeals ignore findings of fact which are undisturbed by its ruling and which compel affirmance of the fact finder's holding of non-infingement under the "prejudicial error" rule?

4. Did the court of appeals violate its stated rule of law when it ignored a finding of fact that the claim construction imposed by the fact finder was required by the specification?

STATEMENT PURSUANT TO RULE 21(b)

The caption of the case in this Court contains the names of the parties to the proceedings in the Court of Appeals for the Federal Circuit. The International Trade Commission was also a party to the proceedings in the Court of Appeals for the Federal Circuit.

STATEMENT PURSUANT TO RULE 28.1

A Certificate of Interest is filed below.

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On Certiorari To the United States Court of Appeals For the Federal Circuit

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PETITION FOR WRIT OF CERTIORARI

Petitioners Valmet Oy and TVW Paper Machines, Inc. pray that a writ of certiorari issue to review the judgment of the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The opinion of the Court of Appeals for the Federal Circuit is unreported and appears in the Appendix to this petition at Appendix A-1. The order of the Court of Appeals denying Petitioners' request for rehearing appears at Appendix A-5. The Initial Determination of the Administrative Law Judge as it relates to the infringement issue and the Commission Decision Not To Review Initial Determination appear at Appendix A-8 and A-6, respectively.

GROUNDS OF JURISDICTION

The judgment of the Court of Appeals for the Federal Circuit sought to be reviewed is dated January 4, 1985. Petitioners timely petition for rehearing, which was accompanied by a similar petition filed by the International Trade Commission, was denied by order of the Court of Appeals for the Federal Circuit dated February 26, 1985. Jurisdiction of this Court to review the January 4, 1985 judgment of the Court of Appeals for the Federal Circuit is conferred by 28 U.S.C. §1254(1) (1948).

STATUTES INVOLVED

5 U.S.C. §706 (1966)

Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall—

(1) compel agency action unlawfully withheld or unreasonably delayed; and

(2) hold unlawful and set aside agency action, findings, and conclusions found to be—

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;

(D) without observance of procedure required by law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or

otherwise reviewed on the record of an agency hearing provided by statute; or

(F) unwarranted by the facts to the extent that the facts are subject to trial *de novo* by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

Pub. L. 89-554, Sept. 6, 1966, 80 Stat. 393.

STATEMENT OF THE CASE

1. Introduction

The newest court of appeals needs guidance. All too often, the Court of Appeals for the Federal Circuit (hereinafter the CAFC) is not following its congressionally mandated appellate function. Rather, it is engaging in *de novo* fact finding in violation of 5 U.S.C. §706 (1966), Fed.R.Civ.P. 52(a) and Supreme Court precedent. *NLRB v. Pipefitters,* 429 U.S. 507, 522 n.8b, 9b (1977); *ICC v. Clyde Steamship Company,* 181 U.S. 729, 731 (1901); *see also Pullman-Standard v. Swint,* 456 U.S. 273, 291-293 (1982) [applying the same standard under Fed.R.Civ.P. 52(a)]; *Kelly v. Southern Pacific Co.,* 419 U.S. 318, 331-332 (1974). This ongoing abusive practice must be corrected—only this Court has the power to do so.[1]

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[1] Two months after the CAFC rendered its decision in the instant case, this Court held that the reviewing court oversteps its bounds under Rule 52(a) if it undertakes to duplicate the role of the lower court. "In applying the clearly erroneous standard to the findings of a district court sitting without a jury, appellate courts must constantly have in mind that their function is not to decide factual issues *de novo*". (*Anderson* v. *City of Bessemer City, North Carolina,* U.S. 53 U.S.L.W. 4314 March 19, 1985). Indeed, the standard of review in cases arising under APA §706 is even stricter than the standard under FRCP §52(a). Therefore, in lieu of granting this petition, this Court may consider reversing the judgment of the CAFC and remanding for further proceedings consistent with *Anderson.*

The CAFC has now been in existence for about 30 months. During its brief life, petitions for writs of certiorari filed with this Court have repeatedly complained that the CAFC is exceeding its appellate authority by engaging in *de novo* fact finding. Since the first petition for a writ of certiorari seeking this Court's review of a judgment from the CAFC was reported, almost ten percent of the petitions emanating from the CAFC have raised this issue. In stark contrast only one percent of the petitions emanating from all the other courts of appeals combined have raised this issue. (See Appendix A-43.) The epidemic of petitions complaining of the CAFC's repeated adventures in fact finding shows a need for this Court's intervention.

2. Proceedings Below

In a complaint filed with the Commission on April 5, 1983, respondent Beloit alleged that Valmet violated §337 of the Tariff Act of 1930 as amended [19 U.S.C. §1337 (1982)] (hereinafter §337), by importing and selling papermaking machine forming sections allegedly infringing Beloit's U.S. Patent No. 3,276,758. The accused forming sections are manufactured by Valmet in Finland and imported into the United States by TVW for sale to domestic customers.

After discovery and a trial before an administrative law judge (hereinafter the ALJ) an Initial Determination was handed up to the Commission. In that Initial Determination, the ALJ concluded, *inter alia,* that the accused forming sections did not infringe (A-42).[2]

By Order of March 19, 1984, (Appendix, A-6) the Commission adopted only that portion of the ALJ's Initial Determination pertaining to non-infringement. Based thereon the Commission, in its Decision Not to Review Initial Determination, found that Valmet had not violated §337. The Commission explicitly stated that it took no position on the other issues

[2] The portion of the Initial Determination relating to infringement is attached as Appendix A-14 to A-42.

considered in the Initial Determination[3] "since the findings and conclusions of the presiding officer regarding noninfringement are dispositive of the question of whether there is a violation of §337." (Appendix A-6.) The Commission found that Valmet's accused machines did not infringe the suit patent because the accused machines did not include "a curved stationary surface adjacent an entrance nip" as called for in each and every asserted claim (A-26, FF 42).

Beloit filed a Notice of Appeal to the CAFC limited to the non-infringement issue. After an unsuccessful motion by Valmet to broaden the issues on appeal to include patent validity and injury to the domestic industry, the appeal proceeded solely on the infringement issue. By judgment entered January 4, 1985 (Appendix A-1 to A-4), the CAFC reversed the Commission's decision of non-infringement, found infringement, and remanded to the Commission solely for determinations on the issues of patent validity and injury to the domestic industry. This petition for writ of certiorari seeks review of that judgment.

3. The Factual Issue Below

The question in this case is the interpretation of a term in a patent claim, namely the claim word "adjacent".[4] All parties conceded at trial that the word, as used in the claims, is ambiguous.[5] Precedent from the CAFC itself establishes that the meaning of an ambiguous claim term is a question of fact.

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[3] I.e., Patent validity and whether the alleged unfair acts substantially injured or tended to substantially injure an efficiently and economically operated domestic injury.

[4] Much of the trial before the administrative law judge, whose recommended findings of fact on the issue of non-infringement were adopted by the Commission, was devoted to interpretation of the ambiguous term in question (FF 43-55).

[5] In its Post-Hearing Brief, Beloit conceded that:

> "In the absence of any specific definition in the text of the patent, resort to the drawings of the '758 patent must be made to interpret the term adjacent in the claims. . " (Beloit Post-Hearing Brief at 8. This excerpt is cited by the Commission in Finding of Fact 49).

Structural Rubber Products Co. v. Park Rubber Co., 749 F.2d 707, 722 n.14 (Fed. Cir. 1984); *McGill Inc v. John Zink Co.* 736 F.2d 666, 672 (Fed. Cir 1984).

The word "adjacent" finds importance in that it interrelates two claim elements, the entrance nip, which is a zone of convergence defined between two converging paper forming wires, and a curved stationary surface which shapes the entrance nip into gradual convergence. The claims all require that these two elements be "adjacent".[6]

Respondent Beloit Corporation (hereinafter Beloit) argued that all the word "adjacent" means in the claims is "nearby". Petitioners Valmet Oy and TVW Paper Machines, Inc. (hereinafter collectively Valmet) argued that the word "adjacent" in the claims requires an abutting relationship between the entrance nip and the curved stationary surface, such that the curved stationary surface shapes the entrance nip into gradual convergence.

The International Trade Commission (hereinafter the Commission) agreed with all parties that the claim word "adjacent" is ambiguous (A-26, Finding of Fact 44, (hereinafter FF); A-28, FF 49), and looked to the specification, drawings and other extrinsic evidence, e.g. expert testimony, to reach the conclusion that the word "adjacent" as used in the claims requires an abutting relationship between the entrance nip and the curved stationary surface for shaping the entrance nip into gradual convergence (A-28, FF 51). The Commission also found that the shaping of the entrance nip by the curved stationary surface is essential to the patented invention (A-26, FF 43).

In its decision on appeal from the Commission, the CAFC held that the Commission applied the incorrect rule of law when it construed the ambigous term "adjacent". The CAFC then threw out all findings of fact premised on the "incorrect" rule (A-3). Having done so, the CAFC was required to

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[6] The pertinent language of claim 1, is "a curved stationary surface positioned adjacent said entrance nip . . ."

remand to the Commission for factual findings construing the term in light of what the CAFC stated to be the correct rule of law. The statutory scheme of appellate review and precedent of this Court so dictate. 5 U.S.C. §706, *NLRB v. Pipefitters,* 429 U.S. 507, 522 (1977); *ICC v. Clyde,* 181 U.S. 29, 32-33 (1901).

Instead, the CAFC held that the accused machines infringed (A-4). This it did without a single Commission finding to support such a holding. The CAFC just ruled. It did so in a three and one-half page unpublished and uncitable opinion that nowhere interprets the ambiguous term (A-1). Yet, the CAFC itself tells us that construction of an ambiguous claim term is a question of fact. *Structural Rubber Products Co. v. Park Rubber Co.,* 749 F.2d at 722 n.14; *McGill, Inc. v. John Zink Co.,* 736 F.2d at 672. The only way the CAFC could have found infringement is by engaging in *de novo* fact finding *sub silentio.* But fact finding is a function reserved by Congress to the trial tribunal.

It is clear from this case alone that the CAFC has so far departed from its congressionally mandated appellate function as to call for an exercise of this Court's power of supervision. It is important for this Court to require that the CAFC adhere to its proper appellate function so that orderliness can be restored to the process of judicial review before the CAFC.

REASONS FOR GRANTING THE WRIT

I. THE CAFC EXCEEDED ITS APPELLATE AUTHORITY WHEN, AFTER SETTING ASIDE FINDINGS OF FACT AS BASED ON AN ERRONEOUS RULE OF LAW AND REVERSING A HOLDING OF NON-INFRINGMENT, IT FOUND INFRINGEMENT INSTEAD OF REMANDING TO THE COMMISSION FOR FACT FINDINGS IN LIGHT OF THE CORRECT RULE OF LAW

1. The Duty To Remand Where Findings Of Fact Are Set Aside

The CAFC's review of a Final Determination of the Commission pursuant to §337 is governed by 5 U.S.C. §706.

Where an agency's findings of fact are set aside because they are predicated on an incorrect rule of law, the duty of the appellate court is not to engage in *de novo* fact finding, but rather to remand to the agency for further fact findings in light of the correct rule of law. As this Court said in *NLRB v. Pipefitters,* 429 U.S. at 522 n.8b, 9b, in which a decision of the National Labor Relations Board, also subject to review under 5 U.S.C. §706, was being reviewed:

> When an administrative agency has made an error of law, the duty of the Court is to 'correct the error of law committed by that body, and after doing so to remand the case to the [agency] so as to afford it the opportunity of examining the evidence and finding the facts as required by law.' *ICC V. Clyde S.S. Co.,* 181 U.S. 29, 32-33, 45 L Ed 729, 21 S Ct 512 (1901).

See also *Pullman-Standard v. Swint,* 456 U.S. at 291-293; *Kelly v. Southern Pacific Co.,* 419 U.S. 318, 331-332 (1974); [same rule applied under Fed. R. Civ. P. 52(a)]; *Railroad Dynamics, Inc. v. A. Stucki Co.,* 727 F.2d 1506, 1514 (Fed. Cir. 1984). The CAFC itself has acknowledged that where findings of fact are set aside by the appellate court, a "remand 'is the proper course unless the record permits only one resolution of the factual issue' ". *Seattle Box Co., Inc. v. Industrial Crating and Packing, Inc.,* No. 84-1559 slip op. at 4 (Fed. Cir. 1985), quoting from *Pullman-Standard, supra,* 456 U.S. at 292. When the relevant facts are not in dispute, the reviewing court is equally competent to apply the proper rule of law to the undisputed facts. This exception has sound underpinnings in the principles of judicial economy. It is inapplicable here where the relevant facts were sharply disputed at trial. See *infra,* I. 4.

2. Interpretation Of An Ambiguous Claim Term Is A Fact Question

The interpretation of an ambiguous claim term, like the interpretation of an ambiguous contract term, is a question of

fact, not a question of law. *McGill, Inc. v. John Zink Co.*, 736 F.2d at 672 n.5 (citing *Seitz v. Brewer's Refrigerating Mach. Co.*, 141 U.S. 510, 517 (1891)). As the CAFC noted in *Structural Rubber Products v. Park Rubber Co.*, 749 F.2d at 722, n.14, "[o]n the other hand, claim construction, dependent on resolution of a factual dispute, does present a jury question."

3. The CAFC Should Have Remanded

Here, the CAFC set aside the Commission's findings of fact interpreting the concededly ambiguous claim term "adjacent" because those findings were based on an incorrect rule of law:

> "We find that the presiding officer, and thus the Commission, erred as a matter of law in limiting the claims of the '758 patent to the preferred embodiments and specific examples in the specification where the specification does not require these limitations."

Beloit v. Valmet Oy, No. 84-1296, slip op. at 3 (Fed. Cir. Jan. 4, 1985) (Appendix A-3).

Having done so, the CAFC should have remanded the case to the Commission for fact findings as to the meaning of "adjacent" in light of the correct rule of law. Instead, the CAFC entered a holding of infringement. It did so without a single supporting factual finding.

4. There Was A Factual Dispute Regarding The Meaning Of The Claim Word "Adjacent"

The meaning of the claim term "adjacent" was a principal issue at trial. Much of the trial before the ALJ was devoted to the presentation of evidence bearing on this issue. Testimony was presented live, with the ALJ having a unique opportunity to judge the credibility of the witnesses. Commission Findings of Fact 43-55 (Appendix A-26 to A-32) are devoted to the Commission's interpretation of this term in light of the evidence presented at trial. This is not a case that falls within the exception to the rule requiring remand. That exception only applies where the facts are not in dispute and the reviewing

court is just as capable of applying the law to those undisputed facts as the trial court. Here, the meaning of "adjacent" was sharply disputed at trial. Compare Beloit Post Hearing Brief pp. 6-8 with FF 43-55.

At trial, the burden of proof on the issue of infringement resided with the patentee, Beloit. To find infringement, the patent claims had to be interpreted. The interpretation of an ambiguous claim term, which all parties conceded "adjacent" to be, is a question of fact. Therefore, a holding of infringement could not be entered without fact findings defining this ambiguous term.

Yet the CAFC did exactly that. After setting aside the Commission's findings of fact interpreting "adjacent" because they were based on an incorrect rule of law, the CAFC entered a holding of infringement.[7] In doing so, it nowhere tells us what the claim term "adjacent" means. It never even hints at a meaning. Yet, for the CAFC to find infringement, it necessarily must have construed the claim term "adjacent", for without doing so the issue of infringement could not be resolved. Plainly, what the CAFC did was to engage in *de novo* fact finding *sub silentio*. It evaluated the evidence, reached its own conclusions as to the interpretation of the disputed claim term, and applied that interpretation to the accused machine. This is precisely what it is not permitted to do.

If the CAFC had openly entered its own fact findings interpreting "adjacent" it clearly would have violated 5 U.S.C. §706. That it did so *sub silentio* is no less a violation.

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[7] There was another ambiguous claim term, "entrance nip", which the Commission construed and found not to be present in the accused machines (A-32 to A-34 FF 56-61). This formed an independent basis for the Commission's determination of non-infringement. The CAFC dealt with this aspect of the Commission's determination in precisely the same fashion as it did with respect to the Commission's determination of non-infringement based on construction of the ambiguous claim term "adjacent". Rather than clutter this petition with repeated references to both ambiguous terms, petitioners focus herein only on "adjacent".

This Court should vacate the CAFC's judgment holding infringement, and direct the CAFC to remand this case to the Commission for findings of fact interpreting the claim term "adjacent" in light of the correct legal standard announced in the CAFC's Opinion.

II. THE COMMISSION FOLLOWED THE CORRECT RULE OF LAW WHEN IT REFERRED, *INTER ALIA*, TO THE SPECIFICATION AND DRAWINGS TO CONSTRUE THE PATENT CLAIMS

To determine whether an accused machine infringes a patent, the asserted claims must be compared with the accused machine. *Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co.*, 339 US 605, 607 (1950); *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476 (Fed. Cir. 1984), *cert. denied* U.S. , 105 S. Ct. 306 (1984). To compare or "read" a claim against an accused machine, the boundaries of the claim must, of course, first be established. It is a fundamental principle of law to construe the patent claims in light of the specification, drawings and other patent documents. For example, in *United States v. Adams,* 383 U.S. 39, 49 (1966), this Court said: "it is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention".

Likewise, in *McGill v. John Zink,* 736 F.2d at 672-675 the CAFC held that construction of ambiguous claim language requires consideration of the specification, drawings, underlying patent documents and extrinsic evidence, including expert testimony.

Faced with an ambiguity regarding the meaning of the claim term "adjacent", the Commission did precisely that. It considered the specification, drawings, underlying patent documents and expert testimony. It did so to establish the meaning of the ambiguous term so that it could delineate the boundaries of the claim—an essential prerequisite to a determination of infringement.

The CAFC set aside the Commission's findings of fact construing the ambiguous claim term "adjacent" on the ground that the Commission's approach to claim construction was premised on an incorrect rule of law. According to the CAFC, the Commission erred by "limiting the claims of the '758 patent to preferred embodiments and specific examples in the specification when the specification does not require these limitations." (Appendix A-3).

There is absolutely no discussion in the CAFC's Opinion supporting its conclusory statement that the Commission erred by limiting the claims "to preferred embodiments and specific examples in the specification." Nowhere did the Commission make such a statement and nowhere can it be inferred from anything the Commission said. What the Commission did say was that "there is good cause for referring to the specification and drawings in order to interpret the meaning of 'adjacency' in the '758 patent" (A-28, FF 49).[8] This is a correct statement of law. The Commission did not err.

Indeed, the Commission's decisions have consistently announced the truism that patent claims must be construed with reference to the specification and drawings. See e.g., *Headboxes and Paper Machines Forming Sections for the Continuous Production of Paper, and Components Thereof*, USITC Pub. No. 1197 (1981), *Centrifugal Trash Pumps*, USITC Pub. No. 943 (1979). There is nothing in the Commission's decision to indicate that it departed from that principle here. In truth the CAFC's "reason" for discarding the factual findings supporting the Commission's construction of the claim term "adjacent", i.e., that the Commission followed an incorrect rule of law, is without basis. It was but a pretext for discarding fact findings supported by overwhelming evidence.

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[8] Beloit itself argued that resort to the drawings of the patent must be made to interpret the claim term "adjacent". *See supra* note 5, at p. 5.

III. THE COURT OF APPEALS IGNORED FINDINGS OF FACT WHICH ARE UNDISTURBED BY ITS RULING AND WHICH COMPEL AFFIRMANCE OF THE COMMISSION'S HOLDING OF NON-INFRINGEMENT UNDER THE "PREJUDICIAL ERROR" RULE

5 U.S.C. §706 provides that: "In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error."

Where agency findings are set aside as predicated on an erroneous rule of law, the "prejudicial error" rule requires affirmance of the agency's determination if it is clear from the remaining undisturbed findings that the determination would have been the same. In *Consolidated Gas Supply v. Federal Energy Regulatory Commission*, 606 F.2d 323 (D.C. Cir. 1979), *cert. denied* 444 U.S. 1073 (1980) the court said: "The appropriate standard is to remand for correction of an error only when there is substantial doubt that the administrative agency would have reached the result it did absent reference to the material." 606 F.2d at 329. Here it is clear that the administrative agency would have reached the result it did even absent the findings set aside as based on an "erroneous" rule of law. The Commission's decision should be affirmed.

Assuming *arguendo* that the Commission applied an "erroneous" rule of law, the legal error affects only the Commission's findings which construe "adjacent" based on the preferred embodiments and specific examples in the specification. All of the remaining findings not based on the drawings and specification are undisturbed by the CAFC's decision.[9] When these undisturbed findings are considered in light of the record as a whole, it is evident that the Commission's decision of non-infringement is supported by more than substantial evidence.

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[9] The record shows that of the Commission's 77 findings on the infringement issue, only 8 involve the interpretation of the claims in light of the specification and/or the drawings.

The undisturbed findings—and there are many—clearly require that the Commission's determination of non-infringement be affirmed. *Helvering v. Rankin*, 295 U.S. 123, 132-133 (1935). These undisturbed findings are supported by substantial, indeed overwhelming, evidence.

By way of example, Mr. Chapman, former head of research at Beloit's British subsidiary, Beloit-Walmsley, who was present when the patented invention was made, testified (RX 381, p. 33):

> Q: *Could you tell me whether you have any understanding of what the term "adjacent" means in the claim language?*
>
> A: I would describe it as forming one side of the nip.
>
> Q: *So where it says that "the stationary surface is positioned adjacent the nip", to you that means that the curved stationary surface is forming one side of the nip?*
>
> A: Yes.
>
> Q: *Is that to create any particular type of nip?*
>
> A: Gentle nip.
>
> Q: *Is that the same thing as the gradual nip that we talked about?*
>
> A: Gradual nip, yes. (RX-381, Chapman Dep. at 33).

Beloit's own technical expert, Michael Waller, explained the reason why the claims of the suit patent define the curved stationary surface as adjacent the entrance nip. (RX 392, pp. 475-476):

> Q: *Now, do you have any idea why—what was the purpose in the claims for defining the curved stationary surface as being adjacent the entrance nip?*

A: In order to assist in controlling the shape of the entrance nip.

Q: *Why do they want to control the shape of the entrance nip?*

A: In order to control the amount of convergence that the stock stream feels.

Q: *What effect will that have on the material in the entrance nip?*

A: The intent is to provide initial gradual dewatering through small convergence.

Q: *But the gradual dewatering is really due to a pressure buildup in the nip, is it not?*

A: Yes.

Q: *That pressure buildup is a gradual buildup due to the gradual convergence of the wires defining—in the zone defining the entrance nip, is that not correct?*

A: Yes.

Q: *That is why we have the curved stationary surface adjacent the entrance nip, correct?*

A: Yes.

This evidence alone, which supports the Commission's interpretation of "adjacent" as requiring the entrance nip to be at least partially abutting and shaped into gradual convergence by the curved stationary surface, is more than substantial. The testimony of Chapman and Waller explains why the claims of the suit patent require the entrance nip to be in abutting relationship with the curved stationary surface—*it has to be.* Indeed this is why it is shown that way in all of the preferred embodiments and specific examples. This testimony was ignored by the CAFC.

The Commission's findings regarding the accused machines are also undisturbed by the CAFC's decision. Those

findings (A-22 to A-25, FF 29-41; A-26 to A-28, FF 45-49 first sentence) show that in the accused machines the nip is abrupt, not gradual; that the end of the nip is separated from the curved surface by an intervening forming roll and hence the nip cannot and does not abut the curved surface; and that the nip is in no way shaped by the curved surface.

It is therefore clear that even if the Commission's findings interpreting the ambiguous claim term "adjacent" with reference to the specification and the drawings are disregarded, the remaining undisturbed findings (A-14 to A-21, FF 1-23; A-22 to A-25, FF 27-41; A-26 to A-28, FF 43-49; A-28 to A-29, FF 51; A-31 to A-32, FF 53-56; A-34 to A-40, FF 59-75; and A-40 to A-41, FF 165-166), considered in light of the record as a whole, provide more than substantial evidence to support the Commission's determination of non-infringement.

IV. THE CAFC IGNORED ITS OWN RULE OF LAW

Under the CAFC's own stated rule of the law it is proper to limit the claims to the preferred embodiments and specific examples if such a limitation is *required* by the specification. (Appendix A-3).

The CAFC ignored the Commission's finding of fact (A-29, FF 52 at A-30) that specifically construed the claim term "adjacent" as defining structure which the specification of the suit patent characterizes as *"essential"* to the invention. By doing so, the CAFC discarded the very finding which required the CAFC to apply its own stated exception to its controlling rule of law. This is Catch-22 jurisprudence.

The Commission finding that the specification describes the relationship of adjacency as "essential" is supported by substantial evidence. As the Commission noted in Finding 52 (at A-30), the suit patent, in column 8, lines 71-75 expressly states that: "Only the cooperation of these elements [the curved stationary surface and the following rotary cylinder] to define a gradually converging path of wire travel *is essential*. .". (Emphasis added)

Beloit's expert Waller testified in connection with that very passage of the suit patent:

> Q: *Is that in your opinion an essential element of the invention that is covered by the suit patent?*
>
> A: Yes, it is (RX 392 at 235).

Waller further testified that:

> A: My understanding is that the teaching of the patent requires gradual convergence (RX 392 at 337).

The evidence clearly shows that in the claimed machines, a gradual entrance nip is essential to the suit patent invention and is achieved by using a curved stationary surface in abutting relation to the entrance nip for shaping the entrance nip into grandual convergence. This is precisely what the Commission found the claim term "adjacent" requires.

Undisturbed Commission findings also establish that the very purpose of the curved stationary surface in the claimed machines was to correct a deficiency in an earlier design wherein paper making stock (a highly aqueous slurry of water and fiber) spewed from between the wires forming the entrance nip when the stock was shot in the form of a jet stream directly into an abrupt, (i.e. non-gradual) entrance nip. The shaping of an abrupt entrance nip into the gradual entrance nip through use of an abutting curved surface was intended to and did in fact eliminate the spewing problem (A-34 and A-31, 32, FF 59, 53). These findings, which reinforce the finding that a gradual entrance nip is essential to the claimed invention, were also ignored by the CAFC.

It is an undisturbed finding and an undisputed fact that in the accused machine the nip is abrupt, not gradual (A-23, FF 32, 32; A-27, FF 46; A-34, FF 60). It is also undisturbed that the abrupt nip in the accused machine would spew if stock were shot directly into it (A-34, FF 60). Beloit's expert Waller so testified—twice (Waller Tr. 174; Joint Appendix 350 (hereinafter JA), RX 381 Chapman Dep. 27A, JA 864, RX 392, Waller Dep. 350). It is also undisputed that in the accused machines the spewing problem was eliminated in an entirely different manner than by shaping a gradual nip (A-34, FF 60).

It is equally clear that the nip in the accused machine ends prior to the curved surface, is separated from the curved surface by an intervening forming roll, and is in no way shaped by the curved surface (A-24, FF 35, A-27, FF 47). The nip in the accused machines is simply not adjacent the curved stationary surface as "adjacent" is used in the claims of the suit patent. The nip and the curved surface do not abut in the accused machines. (A-24, FF 35; A-26 to A-27, FF 45; A-27, FF 47; A-27, FF 48; A-40, FF 165; A-40 to A-41, FF 166).

This interpretation of the word "adjacent" is not only *required* by the specification, it is the only interpretation which results in an operative embodiment. The sole living inventor so testified (A-28 FF 51 and Gustafson testimony at the end of A-32, FF 53). Moreover, if the entrance nip is not adjacent the curved stationary surface for shaping the entrance nip into gradual convergence, the shoe or curved stationary surface serves no purpose in the claimed machines. Beloit's own experiments with the "modified Bel Roll" prove that (A-40, FF 166). Based on Beloit's own test results, the Commission found: "a shoe [curved stationary surface] . . . is only useful . . . where it helps to shape a gradual entrance nip." (A-41, FF 166). This finding was left undisturbed by the CAFC's decision.

Certainly the above recited evidence is more than substantial and supports the Commission's finding that "adjacency" requires that the entrance nip abut the curved surface and that this relationship "is an essential element of the suit patent device". (A-26 FF 43, A-28 to A-31, FF 51, 52).

In its opinion below, the CAFC tells us that it is proper to limit claims by reference to the preferred emboliments and specific examples where the specification "requires" the limitation. That is precisely what the Commission found here. Under the CAFC's own stated rule of law, the Commission's determination of non-infringement must stand.

CONCLUSION

This case does not present an isolated complaint. As set out above, the percentage of petitions for writs of certiorari emanating from the CAFC which raise the issue of improper appellate *de novo* fact finding is a full order of magnitude greater than the average from all of the other circuit courts of appeals combined. (A-43) Variances of that magnitude are, in the jargon of statisticians, statistically significant. They cannot be dismissed as aberrational. Indeed, on occasion, judges of the CAFC itself have criticized that court for exceeding its appellate function by engaging in *de novo* fact finding. See, e.g., *Jones v. Hardy,* 727 F.2d 1524 (Fed. Cir. 1984) (Kashiwa, J., dissenting in part) (citing *Pullman-Standard v. Swint); (Baginsky v. United States,* 697 F.2d 1070, 1077 (Fed. Cir. 1983), (Kashiwa, J., dissenting in part) *cert. denied,* U.S. , 104 S. Ct. 423 (1983), *reh. denied,* U.S. , 104 S. Ct. 987 (1984).

Even prior to the CAFC's inception concerns were expressed that the CAFC's specialized nature would foster a *de novo* approach to review of lower court and agency determinations. The Commission on Revision of the Federal Court Appellate System, in its report entitled Structure and Internal Procedures: Recommendations for Change, 67 F.R.D. 195 (1975), in a section dealing on proposals for specialized courts, such as a single court to hear all appeals in patent cases, commented

> Other objections to specialized courts also have force. Judges of a specialized court, given their continued exposure to and great expertise in a single field of law, might impose their own views of policy even where the scope of review under the applicable law is supposed to be more limited. 67 F.R.D. at 235.

Similar concerns were expressed during congressional hearings preceding adoption of the Federal Courts Improvement Act of 1981.[10] Those concerns are now a reality.

There is, of course, a way to put the CAFC back on track. That is for this Court to exercise its supervisory authority over the CAFC. The time for doing so is ripe. The statistics of Appendix A-43 show a clearly discernible trend of repeated transgression by the CAFC of its proper appellate function by engaging in *de novo* fact finding. This Court, and only this Court, can reverse that trend. This case, which sharply focuses on this issue, presents an excellent vehicle for this Court to align the CAFC's practice with congressional intent and thereby restore orderliness and consistency to the process of judicial review before that court.

If this Court finds that the Commission followed the correct rule of law in interpreting the concededly ambiguous term in question, it should reverse the CAFC and reinstate the Commission's holding of non-infringement. Even if this Court agrees with the CAFC that the improper rule of law was followed by the Commission, and that the underlying findings of fact based thereon were properly set aside, at the very least this Court should reverse and direct the CAFC to remand this case to the Commission with instructions to enter findings of

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[10] Hearing Before The Subcommittee On Courts Of The Committee On The Judiciary, 97th Cong., 1st Sess. at 147 (statement of George Whitney).

fact interpreting the ambiguous claim term in light of the correct legal standard.

Respectfully submitted,

HUBBELL, COHEN, STIEFEL & GROSS, P.C.

Dated: April 19, 1985

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CERTIFICATE OF SERVICE

It is hereby certified that true and correct copies of this PETITION FOR WRIT OF CERTIORARI have been served upon attorneys for respondent on April 19, 1985, by mailing the copies thereof, contained in sealed envelopes, first-class postage prepaid, addressed to said attorneys as follows:

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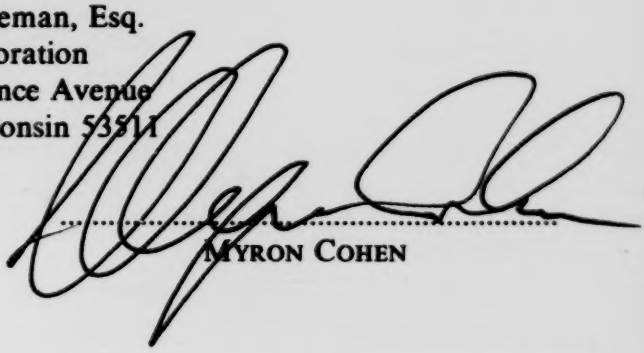

MYRON COHEN

APPENDIX

Note: This opinion will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent. The decision will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

BELOIT CORPORATION,
Appellant,

v.

VALMET OY, TVW PAPERMACHINES, INC., AND UNITED STATES INTERNATIONAL TRADE COMMISSION,
Appellees.

Appeal No. 84-1296

DECIDED: JANUARY 4, 1985

Before BALDWIN, KASHIWA, and BENNETT, *Circuit Judges.*
PER CURIAM.

DECISION

The decision and order of the United States International Trade Commission (Commission) in investigation No. 337-TA-147 is *reversed* and *remanded.*

OPINION

In a decision dated March 19, 1984, the Commission adopted "that portion of the presiding officer's ID relating to the noninfringement of U.S. Letters Patent 3,726,758." The Commission further stated it "has taken no position on the other issues discussed in the ID, since the findings and conclusion of the presiding officer regarding noninfringement are dispositive of the question of whether there is a violation of section 337." Appellant Beloit has accordingly designated the issue relating to noninfringement as the sole issue on appeal to this court, filed its brief, and argued its views to this court; and the Commission and appellees responded with briefs and counterarguments.

This court reviews the factual findings adopted by the Commission under the substantial evidence standard. We are not, of course, bound by the Commission's legal conclusions. *SSIH Equipment, S.A. v. United States International Trade Commission,* 718 F.2d 365, 371-72, 218 USPQ 678, 684 (Fed. Cir. 1983).

The issue of infringement raises at least two questions: (1) what is patented; and (2) has what is patented been made, used or sold by another. Construction of the claims of the patent alleged to be infringed to ascertain what is patented is a question of law. Determination of whether accused devices made, used or sold by another infringe the claims of the patent is a question of fact. *Fromson v. Advance Offset Plate, Inc.,* 720 F.2d 1565, 1569, 219 USPQ 1137, 1140 (Fed. Cir. 1983).

The presiding officer entered findings of fact, adopted by the Commission, with respect to the terms "entrance nip" and "adjacent", as disclosed in the specification and claims of U.S. Letters Patent 3,726,758 ('758 patent). The presiding officer entered further findings of fact, adopted by the Commission,

relating to the equivalency between the accused devices of Valmet Oy and the claims of the '758 patent, these further findings of fact being premised upon the findings of fact entered as to the terms "entrance nip" and "adjacent." Based upon these findings of fact, the presiding officer found that the accused devices of Valmet Oy did not literally infringe the '758 patent, and that there was no infringement under the doctrine of equivalents. The Commission adopted the presiding officer's findings of no literal infringement and no infringement under the doctrine of equivalents.

We find that the presiding officer, and thus the Commission, erred as a matter of law in limiting the claims of the '758 patent to preferred embodiments and specific examples in the specification where the specification does not require these limitations. *Lemelson v. United States,* No. 83-1403, slip op. at 28 (Fed. Cir. Jan. 4, 1985); *Fromson,* 720 F.2d at 1569-70, 219 USPQ at 1140-41; *Deere & Co. v. International Harvester Co.,* 658 F.2d 1137, 1141, 211 USPQ 11, 16 (7th Cir.), *cert. denied,* 454 U.S. 969 (1981).

The presiding officer's erroneous construction of the claims of the '758 patent, which was the basis for the findings of no literal infringement and no infringement under the doctrine of equivalents, renders those findings unsupported by substantial evidence. *Cf Lemelson,* slip op. at 28; *Amstar Corp. v. Envirotech Corp.,* 730 F.2d 1476, 1481, 221 USPQ 649, 653 (Fed. Cir. 1984). Where findings of fact with respect to the terms "entrance nip" and "adjacent" are premised upon an improper interpretation and application of the governing law, those factual findings also cannot be supported by substantial evidence as a matter of law.

We also point out that Valmet Oy cannot avoid infringement merely by adding additional elements to its accused devices where each element recited in the claims of the '758 patent is found in the accused devices. *A. B. Dick Co. v. Burroughs Corp.,* 713 F.2d 700, 703, 218 USPQ 965, 967 (Fed. Cir. 1983).

Accordingly, we reverse the Commission's finding of noninfringement and hold that the accused forming devices of Valmet Oy, as imported by TVW Papermachines, Inc., infringes U.S. Letters Patent 3,726,758.

Appellant Beloit petitioned the Commission prior to the final decision to reopen the record to receive an additional exhibit; the petition was denied. We affirm the Commission with relation to the denial.

In view of our holding of infringement, the case is remanded to the Commission for further appropriate proceedings.

United States Court of Appeals for the Federal Circuit

BELOIT CORPORATION, *Appellant,* v. VALMET OY, TVW PAPERMACHINES, INC., INTERNATIONAL TRADE COMMISSION, *Appellees.*	No. 84-1296

ORDER

A petition for rehearing and a suggestion for rehearing in banc having been filed in this case,

UPON CONSIDERATION THEREOF, it is Ordered by the court that the petition for rehearing be, and the same is hereby, Denied.

The suggestion for rehearing in banc is declined.

FOR THE COURT

George E. Hutchinson,
Clerk

Date: February 26, 1985

cc: William C. Stueber
Myron Cohen
Charles H. Nalls

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of CERTAIN PAPERMAKING MACHINE FORMING SECTIONS FOR THE CONTINUOUS PRODUCTION OF PAPER, AND COMPONENTS THEREOF	Investigation No. 337-TA-147

NOTICE OF COMMISSION DECISION NOT TO REVIEW INITIAL DETERMINATION

Agency: U.S. International Trade Commission.

ACTION: Notice is hereby given that the Commission has determined not to review the presiding officer's initial determination (ID) that there is no violation of section 337 of the Tariff Act of 1930 in the above-captioned investigation. The Commission has adopted that portion of the presiding officer's ID relating to the noninfringement of U.S. Letters Patent 3,726,758. The Commission has taken no position on the other issues discussed in the ID, since the findings and conclusions of the presiding officer regarding noninfringement are dispositive of the question of whether there is a violation of section 337.

AUTHORITY: The authority for the Commission's action is contained in section 337 of the Tariff Act of 1930 (19 U.S.C. §1337) and in section 210.53-.56 of the Commission's Rules of Practice and Procedure (47 F.R. 25134 (June 10, 1982), as amended by 48 F.R. 20225 (May 5, 1983) and 48 F.R. 21115 (May 11, 1983)); to be codified at 19 CFR §§210.53-.56.

SUPPLEMENTARY INFORMATION: On February 14, 1984, the presiding officer issued an ID that there is no violation of section 337 of the Tariff Act of 1930 in the unauthorized importation and sale of certain papermaking machine forming sections for the continuous production of paper, and components thereof. Complainant and respondents filed petitions for review of various parts of the ID, pursuant to section 210.54(a) of the Commission's rules. Having examined the record in this investigation, including the ID, the petitions for review, and the responses thereto, the Commission on March 15, 1984, determined not to review the ID.

Notice of this investigation was published in the *Federal Register* of May 11, 1983 (48 F.R. 21213).

Copies of the public version of the ID and all other nonconfidential documents on the record of this investigation are available for public inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, Docket Section, U.S. International Trade Commission, 701 E Street NW., Room 156, Washington, D.C. 20436, telephone 202-523-0471.

FOR FURTHER INFORMATION CONTACT: P. N. Smithey, Esq., Office of the General Counsel, United States International Trade Commission, telephone 202-523-0350.

By order of the Commission.

KENNETH R. MASON
Secretary

Issued: March 19, 1984

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of

CERTAIN PAPERMAKING MACHINE FORMING SECTIONS FOR THE CONTINUOUS PRODUCTION OF PAPER AND COMPONENTS THEREOF

INITIAL DETERMINATION

John J. Mathias, Administrative Law Judge

Pursuant to the Notice of Investigation in this matter (48 Fed. Reg. 21213, May 11, 1983), this is the presiding officer's initial determination under Rule 210.53(a) of the Rules of Practice and Procedure of this Commission. (19 C.F.R. 210.53(a)).

The presiding officer hereby determines that there is no violation of Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337, hereafter Section 337), in the importation of certain papermaking machine forming sections for the continuous production of paper and components thereof into the United States, or in their sale. The complaint herein alleges that such importation or sale constitutes unfair methods of competition and unfair acts by reason of alleged: (1) direct infringement, (2) contributory infringement, and (3) induced infringement of claims 1, 2, 3, 4, 7, 8, 10, 11 and 12 of U.S. Letters Patent 3,726,758. It is further alleged that the effect or tendency of the unfair methods of competition and unfair acts is to destroy or substantially injure an industry, efficiently and economically operated, in the United States.

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APPENDIX I—Amended Exhibit Lists

Portion Deleted

PROCEDURAL HISTORY

Beloit Corporation (hereinafter Beloit), 1 St. Lawrence Avenue, Beloit, Wisconsin 53511 filed a complaint with the United States International Trade Commission on April 5, 1983, pursuant to section 337 of the Tariff Act of 1930, as amended (19 U.S.C. §1337). The complaint alleges unfair methods of competition and unfair acts in the importation of certain papermaking machine forming sections for the continuous production of paper and components thereof into the United States, or in their sale, by reason of alleged (1) direct infringement, (2) contributory infringement, and (3) induced infringement of claims 1, 2, 3, 4, 7, 8, 10, 11 and 12 of the U.S. Letters Patent 3,726,758 (the '758 patent). The complaint further alleges that the effect or tendency of the unfair methods of competition and unfair acts is to destroy or substantially injure an industry, efficiently and economically operated, in the United States.

After considering the complaint, the Commission voted to institute an investigation into such charges. A notice of investigation was published on May 11, 1983. (48 Fed. Reg. 21213).

Denise T. DiPersio, Esq., Unfair Import Investigations Division, was designated a party as the Commission investigative attorney.

Name as respondents in the May 11 notice were:

Valmet Oy
P. L. 159 SF-00131
Helsinki 13, Finland

TVW Paper Machines, Inc.
180 Interstate North
Atlanta, Georgia 30339

On May 11, 1983 Chief Administrative Law Judge Donald K. Duvall designated Administrative Law Judge Janet D. Saxon as Presiding Officer in this investigation. For "reasons of judicial economy [and] administrative necessity," Chief Judge

Duvall, on September 8, 1983, relieved Judge Saxon and designated Administrative Law Judge John J. Mathias as Presiding Officer in this investigation.

Preliminary conferences were held on May 25, 1983, and October 26, 1983, before the presiding officer. At the conferences appearances were made by the Commission investigative attorney, counsel for the complainant and counsel representing the respondents.

A prehearing conference was held on November 28, 1983, and the hearing commenced immediately thereafter on that same day before the presiding officer to determine whether there is a violation of Section 337. The hearing concluded on December 8, 1983.

The issues have been briefed and proposed findings of fact submitted by the participating parties.

This initial determination is based upon the entire record including proposed findings of fact and conclusions of law and supporting memoranda filed by the parties, as well as their replies. I have also taken into account my observation of the witnesses who appeared before me and their demeanor. Proposed findings not herein adopted, either in the form submitted or in substance, are rejected either as not supported by the evidence or as involving immaterial matters.

The findings of fact include references to supporting evidentiary items in the record. Such references are intended to serve as guides to the testimony and exhibits supporting the findings of facts. They do not necessarily represent complete summaries of the evidence supporting each finding.

The following abbreviations are used in this Initial Determination.

Tr —Official Transcript, usually preceded by the witness' name and followed by the reference page(s);

CX —Complainant's Exhibit, followed by its number and the reference page(s);

CPX—Complainant's Physical Exhibit;

RX —Respondents' Exhibit, followed by its number and the referenced page(s);

RPX—Respondents' Physical Exhibit;

SX —Staff Counsel's Exhibit;

CF —Complainant's Proposed Findings;

CB —Complainant's Supporting Brief;

RF —Respondents' Proposed Findings;

RB —Respondents' Supporting Brief;

SF —Staff Counsel's Proposed Findings;

SB —Staff Counsel's Supporting Brief;

CR —Complainant's Reply Brief;

RR —Respondents' Reply Brief;

SR —Staff Counsel's Reply Brief;

CRF—Complainant's Reply to Respondents' Proposed Findings;

RRF—Respondents' Rebuttal to Complainant's Proposed Findings.

FINDINGS OF FACT

I. JURISDICTION

1. The International Trade Commission has jurisdiction over the subject matter of and the parties to this investigation. (CX 214, Stipulation No. 1; RRF at 1).

II. THE PARTIES

2. Complainant, Beloit Corporation (hereafter Beloit), is incorporated in the state of Delaware and has its principal place of business at 1 Saint Lawrence Avenue, Beloit, Wisconsin 53511. Through its Paper Machinery Division it is engaged in, among other things, the manufacture and sale in the United States of machinery for the manufacture of paper, as well as the research and development of such machinery. (CX 214, Stipulation No. 2; RRF, at 76).

3. Respondent Valmet Oy (hereafter Valmet) is a Finnish manufacturer of papermaking machinery having an address at P. L. 155, SF00131, Helsinki 13, Finland. It manufactures and sells a wide range of papermaking machinery, including the Sym-Former R, one of the devices here in issue. It also offers for sale another device here in issue, the New Sym-Former, but no such former had yet been manufactured as of the close of the record herein. (CX 206, p. 2; CX 190, p. 6; RRF at 76).

4. Respondent TVW Paper Machines, Inc. (hereafter TVW) is incorporated in the State of New York and has its principal place of business at 180 Interstate North, Atlanta, Georgia 30339. Forty percent of the stock of TVW is owned by Valmet; forty percent is owned by Tampella Oy; and 20 percent by Wartsila Oy. TVW is engaged in, among other things, the importation into the United States, and the promotion, marketing and sale in the United States, of papermaking products of Valmet. (CX 214, Stipulation No. 3; RRF, at 76).

III. PAPERMAKING—DEFINITIONS

5. The papermaking process is one in which a very dilute slurry or suspension of fibers in water, called "stock", is processed in such a fashion that the water is removed and a sheet of paper is produced. A typical papermaking machine consists of a forming section, where the greatest percentage of "dewatering" occurs; a press section, where more water is squeezed from the "web" or forming sheet; and a dryer section wherein more water is thermally evaporated. After achieving a final degree of dryness, the web is rolled for transport and for possible further processing. (CX 204, Waller direct, at 11-12; RX 409, Kallmes direct, at 3-4).

6. The "forming section" of the machine is the focus of this investigation. This portion of the machine begins at the headbox slice where the stock is first introduced into the

machine for dewatering and ends where a web is transferred to the press section. (RX 250, Hujula direct at 5). The "headbox" is the device used for first introducing stock into the papermaking machine. The "slice" is the outlet of the headbox through which the stock is introduced. (RX 50, Hujula direct, at 3).

7. "Stock" refers to the materials introduced into the papermaking machine for ultimate transformation into paper. It generally consists of a mixture having 98.5% to 99.5% water. The other .5% to 1.5% of the mixture is comprised of wood pulp fibers and fine particles. Fine particles are made up of small pieces of wood pulp fibers and fillers, which are mineral materials such as clay and talc. Fillers are used because they are inexpensive compared with wood pulp fibers, and also because they improve the surface qualities of the finished paper product, which enhances the "printability" of the paper, i.e., the ability to print on the paper. The stock, as it is introduced into the machine from the headbox slice, is characterized by the fact that the fibers are arranged randomly in three dimensions in the stock mixture. (RX 250, Hujula direct, at 3). As the stock is dewatered the fibers gradually arrange themselves into a two dimensional planar arrangement. By the end of the forming section a formed sheet, or "web," is transferred to the press section. (CX 204, Waller direct, at 12; RX 250, Hujula direct, at 4; RX 467, Stipulation No. 13).

8. The standard forming section of a papermaking machine for well over 100 years was the fourdrinier forming section, which was invented in France in 1799. The fourdrinier section includes a continuously moving, substantially horizontal, looped belt made of wire or screen on which the stock is deposited from the headbox. As the woven wire moves along the fourdrinier table, the stock is dewatered through the wire mesh by gravity, which may be aided by the use of vacuum or suction devices. (CX-204, Waller direct, at 12; RX-409, Kallmes direct, at 3-4). Although improved many times over the

years, the fourdrinier former suffers from several shortcomings, including speed limitations, lack of fine formation and sheet "two-sidedness." (CX-204, Waller direct, at 12; RX-409, Kallmes direct, at 4-5). "Two-sidedness" means that the surface quality on one side of a paper sheet is different from that of the other. "Two-sidedness" is undesirable in the "printability" of the two sides. This problem is encountered with fourdriniers because all the drainage takes place through one side of the sheet. (RX-409, Kallmes direct, at 6).

9. Twin-wire forming machines offered a solution to the shortcomings of the fourdrinier. In such devices, two wires are used and the stock is sandwiched therebetween, for dewatering in both directions. Since the water is removed from both sides of the forming sheet this method tends to eliminate "two-sidedness" and produce a sheet which is "one-sided," i.e., a sheet having appearance and physical characteristics which are the same on each side. Although this concept had been recognized for some time, it was rarely commercialized until after World War II. (RX-409, Kallmes direct, at 4-6; CX-204, Waller direct, at 14-15). Beginning in the early 1950's, the demand for higher speed machines and better formation led to the development of a number of commercial twin-wire machines. (RX-409, Kallmes direct, at 5-8; CX-204; Waller direct, at 14-15).

10. In true twin-wire formers, sometimes called "gap-formers," the stock is deposited directly into the area of convergence (the "nip") of the two wires. (Waller, Tr. 460; Kallmes, Tr. 1217).

11. Top-wire formers, sometimes called hybrid formers, are also sometimes referred to as twin-wire formers, since they utilize, in part, two wires to dewater the paper forming materials. (Kallmes, Tr. 1217; Waller, Tr. 459-61). In a typical top-wire former there is a fourdrinier table, with a top wire section (twin-wire section) situated upon it about half-way down the fourdrinier, followed by the rest of the fourdrinier table. Water is drained

downward in the fourdrinier sections both before and after the top-wire section, with dewatering in both directions in the top-wire section. (Waller, Tr. 460-61).

12. In the development of twin-wire formers it was recognized that as the wire-stock-wire sandwich traveled over a curved surface, such as an arcuate shoe, or rotary cylinder, that centrifugal forces would be generated which could be employed to remove water. The portion of the curved surface or rotary cylinder over which the wire sandwich travels is sometimes referred to as the "wrap." (CX-204, Waller direct, at 16).

IV. THE ISSUE OF INFRINGEMENT

A. The Pertinent Claims of the '758 Patent

13. Claim 1 covers an apparatus for forming fibrous webs comprising:

(a) First and second continuous looped foraminous forming wires which are arranged to converge and provide an entrance nip for the reception of web-forming stock;

(b) A curved stationary surface positioned adjacent said entrance nip;

(c) Means for supporting said wires within their respective loops and moving said wires into said entrance nip;

(d) Said forming wires being arranged to travel over said stationary curved surface downstream of said entrance nip while having stock therebetween;

(e) A rotary cylinder;

(f) Said wires traveling around a part of the periphery of said rotary cylinder immediately following the stationary forming surface, with said surface and said cylinder being on the same side of said wires;

(g) Said stationary curved surface having a relatively large radius of curvature;

(h) The first wire being free of restraining means on its outer surface opposite said rotating cylinder;

(i) Said wires arranged for traveling at a speed so that the stock is dewatered centrifugally through the first wire. (CX-1, Col. 22).

14. Claim 2 covers an apparatus as defined in claim 1 wherein the first wire passes over a roll for guiding it into said entrance nip. (CX-1, Col. 22).

15. Claim 3 covers an apparatus as defined in claim 2 including means for adjusting said roll relative to the entrance nip. (CX-1, Col. 22).

16. Claim 4 covers an apparatus for forming a fibrous web as defined in claim 1 wherein said wires wrap a guide roll after leaving the rotary cylinder with the first wire engaging said guide roll. (CX-1, Col. 22).

17. Claim 7 covers an apparatus for forming fibrous webs as defined in claim 1 including means for separating the first wire from the second wire following the rotary cylinder with the web being carried on the second wire. (CX-1, Col. 23).

18. Claim 8 covers an apparatus for forming fibrous webs as defined in Claim 7 including a web transfer means positioned downstream of the rotary cylinder and in working relation with the second wire for transferring the web away from the second wire. (CX-1, Col. 23).

19. Claim 10 covers an apparatus for forming a fibrous web comprising:

(a) Those features described in sub-paragraphs (a) through (d), (f), (h) and (i) of finding 13, above, in connection with claim 1; and

(b) A rotary cylinder positioned downstream in close-working relation with said curved stationary surface to define a continuous bi-radii curved path of wire travel having a first radius of curvature substantially larger than a second radius of curvature. (CX-1, Col. 23).

20. Claim 11 covers an apparatus for forming fibrous webs as defined in claim 10 wherein the curved stationary surface is a substantially water permeable surface defined by a plurality of longitudinally spaced generally transverse wire-contacting relatively thin edges, the longitudinal contour of said wire-contacting edges defining the curve of said surface. (CX-1, Col. 23).

21. Claim 12 covers an apparatus for forming fibrous webs comprising:

(a) A combination of those features described in sub-paragraphs (a) through (e), (h) and (i) of finding 13, above, in connection with claim 1, and the features of claim 11, as described in finding 20 above; and

(b) Said wires traveling around a part of the periphery of said rotary cylinder following the stationary surface with said stationary surface and said rotary cylinder being on the same side of said wires. (CX-1, Cols. 23-24).[1]

22. The language of all of the claims in issue, therefore, requires, among other things; that:

(a) The first and second wires must be arranged "to converge and provide an *entrance nip* for the reception of web-forming stock"; and

(b) The device must include "a curved stationary surface positioned *adjacent said entrance nip.*" (Findings 13-21, above). (Emphasis added).

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[1] The only real difference between this latter feature of claim 12 and subparagraph (f) of finding 13, above, describing claim 1, is the elimination of the requirement that the wires travel over a part of the periphery of the rotary cylinder "*immediately* following" the stationary surface. (CX 1, Cols. 22 & 24). (Emphasis added).

B. The '758 Device

23. The devices covered by the '758 patent are described in its "Summary of the Invention" as follows:

> The '758 invention generally comprises a forming machine and system including a head box means for providing a ribbon-thin jet stream of web stock in a given direction (horizontal or vertical); two endless loop forming wires arranged to travel in the given direction so as to define a forming zone; a breast roll positioned within each of the looped wires to define a nip therebetween for receiving the stock and curved guide elements positioned downstream of the breast rolls and within the loop of one of the wires to dewater the stock sandwiched between the wires.

(CX-1, Col. 2, l. 15-25).

24. In all of the embodiments envisioned in the patent, the '758 invention is a true-twin wire former, that is, the nip which receives the stock is an "entrance" nip, into which the jet stream of stock is directly discharged. (Kallmes Tr. 1217, CX-1, Col. 1, 2. 15-16, 23-29; Col. 2, l. 52-59; Col. 8, l. 29, 39-43, 61-63; Col. 10, l. 35-45, 38-62; Col. 11, l. 11-29, 36-51; Col. 15 l. 5-9, 26-29, 46-49; Col. 16, l. 67-68; Col. 18, l. 13-37; Col. 21, l. 65-70; Col. 22 l. 3-17; Figs. 3-8). There is no fourdrinier section preceding the twin wire former, or upon which the top wire is imposed. (See Attachments I and II, Figure 8 from the suit patent and a slide of complainant's Bel Baie II, respectively).

25. Further, in each of the embodiments envisioned in the patent, a curved stationary surface can be said to be "adjacent" the entrance nip, in that at least some portion of the entrance nip *lies directly upon* the curved stationary surface. (CX-1, Col. 8, l. 39-51, 63-68; Col. 10 l. 17-25; Col. 17, l. 65-68; Col. 15, l. 63-66; Col. 17, l. 2-8, Col. 18, l. 42-48; Figs. 3-8).

26. Moreover, in each embodiment envisioned by the '758 patent, the curved stationary surface has a relatively large radius of curvature and is followed by a cylindrical wall with a substantially smaller radius of curvature. (CX-1, Figs. 3-8).

27. The basic purposes of twin-wire formers, including the '758 device, were to improve formation (especially through the elimination of two-sidedness) and allow increased machine capacity and speeds. (CX-204, Waller direct, at 12-15).

28. The principal claimed advantages of the '758 device, over predecessor twin-wire formers, were that it provided a gradual nip between the two wires so as to prevent the stock from being rejected or spewed. (Gustafson, Tr. 1501-02; CX-1, Col. 8, l. 41-58; Col. 10, l. 17-40; Col. 12, l. 51-58; Col. 17, l. 22-28; Col. 18, l. 54-59; CX-205, Gustafson direct, at 5-7) as well as eliminating problems involving formation (CX-1, Col. 12, l. 1-27), and it provided for free centrifugal dewatering through the outer or free wire (CX-204, Waller direct, at 16; CX-1, Col. 1, l. 1-2, 23-30).[21]

C. Respondents' Accused Devices

29. The devices of respondents which are alleged to infringe the '758 patent are the Sym-Former R and the New Sym-Former, (CB, at 29 *et seq.*).

30. Both the Sym-Former R and the New Sym-Former are "top-wire formers" which sit atop fourdrinier tables. (Waller, Tr. 463). (See Attachments III and IV, drawings of the Sym-Former R and the New Sym-Former respectively).

31. In both the Sym-Former R and the New Sym-Former, the portion of the fourdrinier table preceding the top-wire (or twin-wire) section of the device is approximately 20 to 30 feet in length (RX-280, Hujula direct, at 13). Between the headbox and the forming roll, where the top-wire

section begins, the bottom wire on these devices is supported by a plurality of dewatering elements. These dewatering devices serve to remove water from the stock along the path of travel between the headbox and the forming roll (the fourdrinier section) by draining water down through the bottom wires. These elements accomplish dewatering by establishing a vacuum beneath the wire. By controlling the amount of vacuum applied to each dewatering element, the amount of water removed thereby can be controlled. In the Sym-Former R, between 35% and 50% of the water initially in the stock is removed in this fourdrinier section. (RX 250, Hujula direct, at 14). A typical percentage of water removal in this section is 43%. (RX-250, Hujula direct at 15; CPX T).

32. In the top wire section of the accused devices there is a nip established in the vicinity of the forming roll between the top wire which wraps the forming roll and the bottom wire. (RX-105-106).

33. This nip is a rather abrupt nip which begins at a point where the wires approach each other and ends at about the six o'clock position on the forming roll. (RX-105-106; Hujula, Tr. 952; RX-409, Kallmes direct, at 12-13; RX-381, Chapman dep., at 26; RX-235-236, which are Chapman dep. Exs. 6JC and 7JC; RX 200, McKie dep., at 122-23; RX-177, which is McKie dep. Ex. W4; and RPX D)[3]

34. The forming roll in the accused devices, as illustrated in RX-107, is an open or drilled hollow roll. By open or drilled is meant that the roll has a multiplicity of holes drilled through its shell, such that the holes occupy

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[3] As the term "nip" is used in the claims of the suit patent, it begins where the wires approach each other to receive stock therebetween and ends where the wires are in general parallelism. (RX-79, Complainant's response to respondents' interrogatory No. 60 (i)). Thus, the nip in the accused devices begins where the wires approach each other to receive the material from the fourdrinier section and ends where they have reached general parallelism—the point where the wires are spaced apart only by material therebetween. (CX-1- Col. 9, l. 18-23; Col. 12, l. 28-34).

approximately 70% of the outer surface of the roll. The entire surface of the roll is covered by a fabric which is shrunk down for a close fit about the roll. The fabric reduces the possibility of unintended marking of the paper with impressions of the holes. (RX-250, Hujula direct, at 16).

35. Following the end of the nip, the twin wires, with materials therebetween, pass around (wrap) a portion of the periphery of the forming roll for a distance of about 40 degrees on the Sym-Former R and about 30 degress on the New Sym-Former. In this section of the accused devices substantial additional de-watering occurs—about 30% of the original volume. (Hujula, Tr. 959; RX-250, Hujula direct, at 17; CX-7).

36. After the twin wires leave the forming roll they traverse a stationary shoe which has a relatively large radius of curvature. The top surface of this shoe is made up of a plurality of individual blades spaced about 3 inches apart. Each blade is slightly curved and about 2 inches wide. The shoe also contains hollow compartments into which water squeezed through the bottom wire can be drawn off. Water squeezed through the top wire is thrown off by centrifugal force and collected in a save-all. (RX-250, Hujula direct, at 21-22).

37. As the wires travel over the shoe, approximately 16% more of the water from the original stock is removed. About 12% is removed through the top wire and approximately 4% is removed through the bottom wire at this point. (RX-250, Hujula direct, at 22).

38. As the twin wires with material therebetween pass over the shoe, the pressure applied on the material is not a continuous, uniform pressure, as would be the case if the shoe were a solid curved surface. Rather, there is a pressure pulse applied at each blade. Therefore, a series of pressure pulses is applied to the paperforming material as it passes over the shoe. These pressure pulses serve to redistribute the fibers and fine particles, thus serving to improve the formation of the finished sheet. (RX-250, Hujula direct, at 23).

39. After leaving the shoe, the twin wires in respondents' accused devices pass over a solid roll on the same side of the wires as the shoe and reverse their upward direction. On the Sym-Former R this wire sandwich wraps the solid roll around an arc of 20 to 40 degrees during this direction reversal. (RX-250, Hujula direct, at 24). In the New Sym-Former this wrap is somewhat less. (Compare RX-106 with RX-105). Due to the passage of the wires over this curved cylinder there is some additional dewatering. Three percent or less of the original water content is removed through the top wire over this roll. There is no dewatering through the bottom wire as it passes over the roll, since the roll is solid. (RX-250, Hujula direct, at 24).

40. Following passage over this solid cylinder the wire sandwich in the Sym-Former R is brought back into the horizontal path of the original fourdrinier machine by a reversing roll.[4] As the sandwich passes around this roll (which is on the opposite side of the wires from the preceding roll and shoe) a small additional amount of water is removed. (RX-250, Hujula direct, at 24). In the New Sym-Former this roll is not needed, as that device has a different configuration which does not require return to the horizontal path of a fourdrinier. (Compare RX-106 with RX-105).

41. In both the Sym-Former R and the New Sym-Former the upper wire is then separated from the first wire by another roll elevated slightly above the plane of the wire sandwich with the aid of suction boxes under the bottom wire. (RX-105-106). There is some additional de-watering before the web, which continues on the bottom wire, is passed on to the drying section of the paper making machine. (CPX T).

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[4] The Sym-Former R was designed to be retrofitted into an existing fourdrinier machine as part of its forming section. (RX-250, Hujula direct, at 11).

D. The Accused Devices of Respondent Do Not Infringe the '758 Patent

42. On the basis of findings 43-61 below, I find that the accused forming devices of respondents do not infringe the '758 patent, in that they do not have a curved stationary surface "adjacent" an entrance nip and, in fact, do not even have an "entrance nip," within the meaning of the claims 1-4, 7-8, and 10-12 of the '758 patent.

E. The Question of Adjacency

43. The requirement that the curved stationary surface be positioned "adjacent" the "entrance nip" is an essential part of each and every claim of the '758 patent at issue in this proceeding. (Finding 22, above). In fact, it was only after the insertion of the phrase "adjacent said entrance nip" was made in connection with the "curved stationary surface" that the examiner allowed the claims in complainant's application Serial No. 795,954 (an application in the chain leading to the suit patent). (RX 377, document entitled "Voluntary Amendment," pp. 1, 2, 4-5; RX-377, Examiner's Amendment, date-stamped May 4, 1971, p. 3). Thus, both through a literal reading of the claims of the suit patent and by way of "file wrapper estoppel," it is clear that "adjacency" between the curved stationary surface and the entrance nip is an essential element of the suit patent device.

44. The claims do not define adjacency in terms of distance, or other measurable indicia. However, it is clear that there must be some direct functional relationship between the curved stationary surface and the nip. (CX-1, Claims 1-4, 7-8, 10-12; Cols. 22-24; Findings 13-21, above).

45. There is no showing in this record that there is any functional relationship between the nip and the curved stationary surface in the accused devices of respondents. (Findings 46-48, below). Moreover, the evidence adduced by complainant at this hearing reveals no showing

of such adjacency under any other indicia. (Findings 49-55, below).

46. The only reliable evidence of record establishes the end of the nip in the accused devices at about the six-o'clock position on the forming roll, which is upstream from (before) the curved stationary surface. (CPX A. S and I; RX-409, Kallmes direct, para. 32; Hujula, Tr. 952; RX-200, McKie dep. at 122-23; RX-177, Ex. W4 to McKie dep.; RX-381, Chapman dep. at 26; RX-235-236, Exs. 6J0 and 7J0 to Chapman dep).[5]

47. Between the downstream end of the nip and the forming shoe in the accused devices the two wires with material therebetween traverse the forming roll for an arc of approximately 40 degrees in the Sym-Former R and approximately 30 degrees in the New Sym-Former. (Hujula, Tr. 959; RX 250, Hujula direct, at 17; CRF, at 1).

48. As the wires wrap the forming roll in Sym-Former R and New Sym Former, between the nip and the stationary shoe approximately 30% of the water originally present in the headbox is removed; about 20% being removed into the forming roll and the other 10% being pressed outward and removed centrifugally from the bottom wire. (CX T; Hujula, Tr. 958-59; Waller, Tr. 67, 172, 453). Functionally then, this 30 to 40 degree wrap of the forming roll on the accused devices removes about three-quarters as much

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[5] The only contrary testimony in the record is ambiguous and unreliable. Dr. Waller was unable to locate the end of the nip on the accused devices with any degree of accuracy. (Waller, Tr. 60, 453-57). Mr. Gustafson, one of the inventors of the suit patent, testified in a conflicting manner as to the location of the end of the nip on those devices. (RX-390, Gustafson dep. at 310-13, 315-16, 595, 512, RX-137, Ex. 24 to the Gustafson Dep.). Moreover, complainant agrees with respondents' proposed find. g No. 82 which states that "between the downstream end of the nip and the forming shoe in Sym-Former R, the *two* wires with material therebetween traverse the forming roll... for an arc of approximately 40 degrees." (CRF at 1) (Emphasis added). In order for the wire sandwich to wrap the forming roll for that distance it would be necessary for the wires to be in general or substantial parallelism and the nip would have to be near the six o'clock position on the forming roll. (See RX-105, 106; RPX D; CX-5).

water as the entire 20-30 foot fourdrinier section which precedes the forming roll on these devices. (Finding 31, above). Under these circumstances, there is obviously a functional gap between nip and the stationary curved surface in respondents' devices. Certainly if a 15-20 foot fourdrinier section intervened between the nip and the shoe, they could not be considered "adjacent."[6] (See Findings 165-166, below for further reasons why the nip and shoe do not have the required functional relationship in the accused devices).

49. This latter analysis is based on a purely literal reading of the claims in issue of the suit patent, without any reference to the drawings and specification. (Findings 46-48). In this instance, however, there is good cause for referring to the specification and drawings in order to interpret the meaning of "adjacency" in the '758 patent. As noted by Mr. Gustafson, one of the inventors, during his deposition, "adjacent. . . can be relative." (RX-390 at 293). One of complainant's counsel, during that same deposition, also notes that "adjacent has different meanings and different connotations in different circumstances." (RX-390 at 292). Indeed, complainant has admitted in its Post-hearing Brief that, "In the absence of any specific definition in the text of the patent, resort to the drawings of the '758 patent must be made to interpret the term "adjacent" in the claims. . . ." (CB at 8).

50. When reference is made to the specification and drawings of the '758 patent, it becomes even clearer that the nip and the curved shoe of the accused devices are not "adjacent" within the meaning of the suit patent.

51. Even Mr. Gustafson, one of the inventors of the suit patent, agrees that in order to be "adjacent" within the intent and meaning of that patent, the curved stationary surface must partially shape one side of the nip in order to

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[6] 15-20 feet represents approximately three-fourths of the length of the fourdrinier section which precedes the forming roll in respondents' devices. (Finding 31).

create a gradual nip and, further, that if the nip terminates before the shoe, the shoe cannot shape the nip. (RX-390, Gustafson dep., 296-99; CX-205, Gustafson direct, at 7).

52. The specification and figures of the suit patent also make it clear that the nip cannot end prior to the curved stationary surface. In each of Figs. 3 through 8 of the suit patent, the entrance nip lies directly upon the curved stationary surface, at least in part.[7] The specification too, is quite uniform in placing the nip on the guide elements, i.e., the curved stationary surface and, in the case of Fig. 3, the following roll. Beginning in the "Abstract of the Disclosure" in Column 1 of the patent it is stated:

> A twin-wire web making system for use in forming multi-ply or single-ply webs wherein a web stock is discharged into a nip between opposed forming wire runs *arranged to converge with one another over guide elements.* (Emphasis added).

and,

> At each sequence a head box means discharges web stock between twin wires supported by spaced breast rolls defining the nip therebetween *and the wires gradually converge into general parallelism over curved guides* by wrapping a portion of their surfaces so as to centrifugally dewater the stock sandwiched between the wires. (Emphasis added).

and, again,

> [A] stationary curved surface and a rotary cylinder are positioned on the same side of the wires *to guide the wires into general parallelism.* (Emphasis added).

Also, in the "Description of the Preferred Embodiments," in connection with the description of the features of Page 3 through 8, the specification of the patent, in each case, shows a portion of the nip resting upon the curved

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[7] Figs. 1 and 2 of the suit patent do not contain a curved stationary surface and it is conceded by complainant that these figures are not covered by any of the claims of the patent. (RX-390, Gustafson dep. at 381; RX-409, at 10).

stationary surface, and ending either thereon, or on the following rotary cylinder. Thus, in connection with Fig. 3 it is stated:

> [T]he portions of the curved stationary surface and the cylindrical roll cooperate to provide a single wire guide having a relatively large diameter arcuate surface whereby the initial curvature of the nip between the converging wires is much less than would otherwise be available . . . the cooperation of these elements to define a gradually converging path of wire travel is essential . . . The curvature is such that as the wires are nipped together, they experience every [sic] increasing curvature up to that of the roll . . . The wires . . . gradually converge until they actually attain general parallelism, as by contacting the rotating peripheral surface of the roll.

(CX-1, Col. 8, l. 63-68, 71-73; Col. 9, l. 4-7, 17-19).

Similarly in connection with Fig. 4, the specification states:

> The stationary arcuate plate or shoe . . . increases the effective diameter of the roll . . . and thereby allows a more gradual consolidation of the jet-stream *between the two wires as they approach each other and the roll surface.*

(CX 1, Col. 10, l. 35-40). (Emphasis added).

Again, in the description of the embodiment contained in Fig. 5, the specification says:

> The first curved guide surface *encountered by the converging wires* is wire guide 218 [the curved stationary surface] which comprises an essentially elongated, smooth, stationary generally convexly curved surface *urging the wire F2 [the bottom wire] into general parallelism* with wire F1 [the top wire] . . . It will be noted that the forming wires F1 and F2 do not come into actual parallelism with one another *until some point 218a well beyond the lead edge of wire guide 218.*

(CX-1, Col. 12, l. 41-45, 65-68). (Emphasis added).

Referring to Fig. 6, the specification provides:

> The wires actually tend to assume general parallelism at a point 318a along the surface of guide element 318 [the curved stationary surface] so that a gradual build-up of pressure occurs throughout the area of convergence.

(CX-1, Col. 15, l. 63-66).

In connection with Fig. 7, the specification describes the relationship between the nip and the curved stationary surface in the following language:

> [T]he wires continue to travel convergingly together into general parallelism over a curved wire guide 428 to attain such parallelism . . . at a point 428a along the surface of the guide element 428.

(CX-1, Col. 17, l. 2-8).

Figure 8 is also shown to require a similar relationship between the nip and the curved stationary surface. CX-1 at Col. 18, lines 64-66, states:

> The wires F1 and F2 do not come into actual parallelism with one another until a point 517e well beyond the lead edge of the guide element 517.

53. It is clear from the above and other evidence of record that this relationship between the nip and the curved stationary surface is essential to the '758 patent device. Mr. Gustafson, in his witness statement, points out that:

> The provision of a curved shoe having a relatively large radius in the embodiments of Figures 3 through 8 of CX 1 is a unique *way of providing an entrance nip* for the papermaking stock wherein dewatering is initially done in a relatively gentle manner.

(CX-205, at 7). (Emphasis added).

Mr. Gustafson also noted that the purpose of the curved stationary surface was to reduce the initial drainage

pressure on the stock so as to achieve "less abrupt or harsh initial drainage," so as to eliminate a "spewing problem" in a predecessor machine design. Such "spewing" was due to a lack of "sufficient capacity to accept the amount of stock being supplied to the entrance nip" in the predecessor design. (CX-205, Gustafson direct, at 5-6). Mr. Gustafson also admitted during his deposition that a part of his concept in the '758 patent was to "provide a gap for the reception of a jet stream of stock to move into a nip that has been shaped by an arcuate shoe so that the convergence of the two wires is gradual" and that this could not be achieved if the nip were not adjacent the shoe. (RX-390, at 297). He then admitted that if the nip reached essential or substantial or general parallelism in advance of the shoe, the nip would not be shaped by the shoe. (RX-390, at 297).

54. As found above in Findings 46 and 47, the nips in the Sym-Former R and the New Sym-Former end well before the beginning of the shoe (the stationary curved surface). Therefore, the nip in the Sym-Former R and the New Sym-Former is not "adjacent" the curved stationary surface or shoe. (See also, RX-409, Kallmes direct, at 8-16).

55. Since the requirement of "a curved stationary surface positioned adjacent said entrance nip" is an essential element of each and every suit patent claim here in issue (Finding 22), the accused devices of respondents can not literally infringe the '758 patent, as alleged by complainant.

F. The Absence of an "Entrance Nip" in the Accused Devices.

56. As noted in Finding 22 above, another essential element of each of the claims of the '758 patent which are here in issue, is that the first and second wires must be arranged to converge and provide an "entrance nip" for the reception of web-forming stock. I find that the term "entrance nip" is not self-explanatory. In fact, Mr. Gustafson could not recall any other usage of the term "entrance nip" outside its use in the suit patent. (RX 390, Gustafson dep., at 379). Its precise meaning, i.e., whether

it refers to any convergence of wires in a twin-wire former, or only such convergence which receives stock directly from the head-box, cannot be determined without reference to the drawings and specification of the patent.

57. In all of the figures of the suit patent a substantially homogenous mixture of fibers and water (stock) is discharged directly into the nip formed between the two wires, in the form of a jet stream. (RX-390, Gustafson dep., at 133-37; Waller, Tr. 166-68; RX 409, Kallmes direct, at para. 34).

58. The language of the specification further bears this out to be the fact. With reference to the reception of stock by the nip, between the wires, it is clear that the patent speaks of a jet stream of such stock being deposited directly from the headbox into the nip. (CX-1, Col. 2, l. 52-59; Col. 4, l. 12-13; Col. 5, 30-41; Col. 8, l. 20-29; Col. 10, l. 17-21; Col. 11, l. 45-51, Col. 15, l. 27-29; Col. 16, l. 67-75; Col. 18, l. 24-37).[8] Thus, the modifying word "entrance" as used in connection with the term "nip" in the suit patent is meant to define a nip into which the stock is directly discharged from the headbox. (See

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[8] Mr. Waller claims that in at least one instance the specification indicates that the jet stream of stock is deposited on the bottom wire prior to the entrance nip. He refers to CX-1, Col. 8, line 51 as bearing this out. (Waller, Tr. 488). Even if this were so, the jet stream of stock would still contact the wire immediately before the nip and, therefore, this fact would not materially affect this finding. However, Mr. Waller has misread the specifications in this regard. The language to which he refers:

> The bottom wire 11 is trained over the arcuate stationary surface of the plate or shoe 71 as the jet stream is deposited thereon. . . .

is followed two sentences later by the language

> It will thus be appreciated that the combination. . . of the plate or shoe 71 with a large diameter roll 52 provide a relatively large arcuate surface which more readily assumes the trajectory of the jet stream and allows for a more uniform application of pressure to the jet stream *as it is deposited between the wires.*

(CX-1, Col. 8, l. 51-63). (Emphasis added).
Therefore, although the jet stream first contacts the bottom wire in this instance, it does so *within* the entrance nip.

Findings 165-166, below). Such an "entrance nip" could only be found in a true twin-wire former.

59. This is further borne out by the history of this invention. Its original purpose was to correct a deficiency in an earlier design wherein spewing occurred when stock was received in jet stream form directly from the headbox into the nip. The shaping of a gradual nip through use of an arcuate shoe was intended to eliminate that problem. (Finding 53, above).

60. The Sym-Former R and the New Sym-Former, on the other hand, have eliminated the problem of spewing by an entirely different means. In the latter devices the material issuing from the headbox is substantially dewatered before it even approaches the convergence between the two wires, i.e., the nip. This initial dewatering occurs on the single-wire fourdrinier section of these formers. (RX-409, Kallmes direct, at 14; Finding 31, above). Therefore, there is no concern with the problem of spewing at the nip in Sym-Former R and the New Sym-Former. (RX-409, at 14). This is further borne out by the fact that the nip in the accused devices is an abrupt nip rather than a gradual one. (RX-409, at paras. 33 and 35; CX-1, Col. 17, l. 22 *et seq;* Finding 33). As such, the nip in these devices would not be suitable for the reception of a jet stream of stock directly from the headbox. (Waller, Tr. 174; RX-381, Chapman dep., at 27a; RX-392, Waller dep., at 350; CX-1, Col. 17, l. 22 *et seq.*).

61. Accordingly, I find that the accused devices do not contain an "entrance nip" within the meaning of that term as it is used in the '758 patent. Therefore, for this additional reason, they cannot be considered as infringing devices. (Findings 56-60, above).

G. Additional Differences Claimed By Respondents

62. Respondents also urge that the accused devices do not read on the '758 patent as to one other essential element

of the claims in issue. That is the limitation in such claims that "said forming wires [be] arranged to travel over said curved stationary surface downstream of said entrance nip while having stock therebetween." (RF 107 *et. seq.;* Findings 13-21).

63. It is respondents' position that the forming wires in the accused devices, as they pass over the stationary shoe, have web between them rather than stock. (RF 107-122).

64. The term "stock" as used in the claims of the suit patent is not clearly defined within the language of the claims. (CX-1, Cols. 22-24). The testimony of the experts as to whether the material in the wire sandwich of the accused devices, at the point in question, is "stock" or "web" is conflicting. (CX-204, Waller direct, at 20-22, 41-44; RX-409, Kallmes direct, at 16-17). I find that the specification of the suit patent supports the position that the material in the wire sandwich as it passes over the shoe on respondents' devices is "stock" within the broadest use of that term within the suit patent.

65. The language of the specification indicates that the suit patent often uses the term "stock" in a very broad, inclusive, sense. It is agreed between the parties that the patent treats the words "stock", "web stock" and "web forming stock" synonymously. (Waller, Tr. 94; RF 95). The patent also uses the term "newly forming web" interchangeably with these terms in some places. For instance, at Col. 15, lines 56-60, the specification speaks of the "newly forming web" at drainage points A1 and A2, which are within the nip and before the shoe. (*See also,* Col. 12, l. 65-71; Col. 18, l. 74- Col. 19, l. 2). Other language of the specification calls the materials in this area of the former, and well beyond this point, "stock." (Col. 17, l. 23 *et. seq.;* Col. 18, l. 45-48). Also, in connection with Fig. 8 of the patent, the specification refers to the materials in the area of convergence of the wires (within the nip) first, as "stock," and then as

"newly forming web." (Col. 18, l. 45-48, and Col. 18, l. 74- Col. 19, l. 2). At the same time, however, the term "newly forming web" is also used interchangeably with "web" at other places in the specification. For example, Col. 17, lines 64 *et seq.,* talks about a "sandwiched web" at the point of the beginning of the following roll. Also, Col. 19, lines 43 *et. seq.,* states that the following roll receives the "wire-web-wire sandwich." Again, at Col. 20, lines 50-61, the specification refers to the "web" at the following roll. However, Col. 16, lines 7-12, speak of the sandwich arrangement at the point of the "dewatering roll" as a "newly forming web" and Col. 13, lines 56-63, state: "Further, at this stage of the forming zone, the *newly forming web* will still be in a relatively fluid stage . . . as [it travels] over the curvature of the roll 219 [the following roll] . . . " (Emphasis added). Furthermore, the term "stock" is sometimes applied to the sandwiched materials found in areas of the former where other patent references speak of "web." For example, the specification, in at least two places, uses the term "stock," to describe the materials traveling over the "bi-radii path" or the "guide elements," which include both the curved stationary shoe and the following roll. (CX-1, Col. 21, l. 73 *et. seq.*).[9]

66. The deposition testimony of Mr. Gustafson, one of the inventors noted on the '758 patent, further reveals his tendency to use the term "stock" in a very broad sense. In testifying to the condition of the materials at the point of tangency with the "couch" roll (the following roll), after the shoe, he describes such materials as "stock." (RX-390, at 213). He admits that the materials at this point consist of a "top mat" and a "bottom mat" with a "slurry" in between. (RX-390, at 213). He also admits that the

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[9] The only places where the specification clearly uses the term "stock" in a restrictive manner are those points where it speaks of the "jet stream" of stock being discharged into the entrance nip. There it is clear that "stock" refers to the substantially homogeneous mixture of water and fibers as it is discharged from the headbox. (Waller, Tr. 166-68; RX 390, Gustafson dep., at 133-37; RX-409, Kallmes direct, at para. 34).

middle portion of this sandwich has thickened somewhat and may have some orientation of the fibers (RX-390, at 214, 218), but he maintains that it is still "stock" until it has a sheet structure which can support itself (RX-390, at 212-18).

67. In view of these facts, it appears that when the claims of the patent state that the forming wires shall be "arranged to travel over said curved stationary surface downstream of said entrance nip while having stock therebetween," the term "stock" is used at this point in a very broad sense to describe the condition of the paper forming materials before they are fully formed into a defined mat (one with no appreciable lack of formation in the middle, at which point the sheet structure can support itself). (Findings 64-66). As the materials reach the shoe in respondents' accused devices they have been dewatered of about 73% of the original water from the slurry in the headbox. (CPX T). At this point, though, such materials still consist of about 50 parts water to 1 part solids and still have a great deal of fluid in the middle portion. (Waller, Tr. 78-79, 478-80). I find, therefore, that such materials are still "stock" as that term is used in this portion of the claims relating to the state of the paper forming materials as they pass over the curved stationary surface.

68. Lastly, respondents argue that the accused devices do not infringe the '758 patent because the wires do not pass over surfaces of ever decreasing radius. This argument is based on the fact that in the accused devices the wires first wrap a portion of the forming roll (having a relatively small radius of curvature) then pass over, on the other side, the large radius curved stationary shoe followed by a relatively small radius roll. (CPX T; RF 129). In support of this argument, respondents cite to a portion of the specification of the suit patent which notes that it is an advantageous feature of the patent device that there is no reverse wrap in the path of the wire travel. (RF 131). The lack of such a reverse wrap is not an element of the claims of the '758 patent. Therefore, this configuration of

the accused devices would not distinguish them from the patent device were it not for the effect this configuration has on the requirement of "adjacency" of the nip and shoe, which *is* an element of each of the claims in issue. As noted above, in Findings 43-55, the wrap of the wire sandwich around the forming roll in respondents' Sym-Former R and New Sym-Former necessarily destroys any relationship between the nip and the curved stationary surface in these devices. Therefore, such devices do not read on the suit patent.

H. Equivalency

69. Complainant maintains that even if literal infringement does not exist, respondents' accused devices infringe the '758 patent under the doctrine of equivalents. (CB at 33). To find infringement under that doctrine, as complainant admits, it is necessary to find that the accused product

> performs substantially the same function in substantially the same way to obtain the same result as the claimed product. (CB at 33, citing *Hughes Aircraft Co. v. U.S.*, 219 U.S.P.Q. 473, 480 (C.A.F.C. 1983).

70. In view of Findings 71-75, below, I cannot find infringement herein under the doctrine of equivalents, since respondents' devices do not perform substantially the same functions in substantially the same way.

71. The suit patent herein provides for a "Twin-Wire Web Forming System With Dewatering by Centrifugal Forces." (CX-1, Col. 1, l. 2-3). Its principal components include a gradual "entrance nip" for receipt of the jet stream of stock, a large radius stationary curved surface adjacent the entrance nip which helps shape the nip and provide for gradual dewatering, and a smaller radius rotary cylinder following the stationary shoe and positioned on the same side of the wire as the shoe. (CX-1, Col. 22-24). The path of the twin wires "with stock sandwiched therebetween" is designed so as to provide for free centrifugal dewatering through the top wire as it

passes over the curved stationary surface and following roll. (CX-1, Col. 22, l. 64-66; Col. 23, l. 64-66; Col. 24, l. 24-25; CX-204, Waller direct, at 16-18). The twin-wire formers covered by the suit patent, just as all twin-wire formers, were intended to provide better paper formation, including the elimination of two-sidedness of the paper. (CX-204, Waller direct, at 11, 18; RX-152-154; RX-409, Kallmes direct, at 5-6). The combination of the gradual entrance nip, the curved stationary surface "adjacent" the entrance nip, and the smaller radius cylinder following the shoe were the features which distinguished the patent devices from other twin-wire formers. (RX-152-154; CX-204, Waller direct, at 16-20).

72. In the suit patent devices, the curved stationary shoe and following roll represent the primary dewatering devices. In such formers, essentially all of the free water is removed from the stock by the end of the bi-radii path around the shoe and the following roll. (RX 390, Gustafson dep., at 211; Waller, Tr. 227). In fact, in the Bel Baie II, up to 90% of the water is removed as the wire-stock-wire sandwich travels over the curved stationary surface. (CPX D).

73. Also, in the suit patent devices it is important to avoid pumping, or pressure pulses, in the stock as it passes over the curved stationary surface. (CX-1, Col. 12, l. 3-26, 41-58). In fact, even in embodiments where the curved stationary shoe is slotted, it is important that it be designed in such a manner so as to minimize pressure pulsation. (RX-390, Gustafson dep., at 419-20).

74. In the accused devices of respondents, dewatering and sheet formation take place in a substantially different manner. The curved stationary surface and the following roll are not the primary dewatering devices in the Sym-Former R and the New Sym-Former. Indeed, bout 73% of the water in the stock is removed before the paper forming materials even reach the shoe. (CPX T; Waller, Tr. 195). Only 16% of such water is removed as the

materials pass over the shoe in these devices, and only 3% is removed over the following roll. (CPX T).

75. Furthermore, in the Sym-Former R and the New Sym-Former, one of the principal purposes of the shoe (which is bladed) is to create pressure pulses in the newly forming web, so as to redistribute the fibers and fine particles therein, thus improving the formation of the finished sheet. (RX-250, Hujula direct, at 23; Finding 38, above). Such pressure pulses are in sharp contrast to the need to avoid such pulsing in the patent devices. (Finding 73, above). Thus, in this additional manner, the functions and performance of the accused devices differ from those of the suit patent device. (See Findings 165-166, below).

B. The Modified Bel Roll

165. Mr. Waller has also testified that the modified Bel Roll (Bell Roll with the shoe) embodies all of the features of the '758 patent. (Waller, Tr. 54-57). Respondents did not directly oppose such testimony, as it is respondents' position that no industry involving a modified Bel Roll exists. (RF 511-559). The modified Bel Roll design is not that of a true twin-wire former. If one were built, it would be a top-wire former similar to the Sym-Former R, although it would contain an extended, gradual nip which would end on the curved stationary surface, i.e. the nip and shoe would be "adjacent." (CPX B; Waller, Tr. 55). However, since the stock is not deposited into an "entrance nip" it does not read on the claims of the suit patent. (See Findings 56-60, concerning the lack of an "entrance nip" in respondents' accused devices).

166. Indeed, complainant's experience with an experimental model of the modified Bel Roll provides explicit proof that it is essential to the claims of the suit patent that the nip be an "entrance nip" which receives the jet stream of stock directly from the headbox slice. The record evidence reveals only one test which was run by complainant

on a Bel Roll former modified by the addition of a forming shoe. (RX-38). That test concluded that the only difference between the standard Bel Roll and the modified Bel Roll was that, with the shoe, the machine required more power to operate. There were no apparent improvements in retention or formation. (RX 38; Roell, Tr. 578-80).[11] Therefore, the shoe serves no apparent purpose in the modified Bel Roll. This highleghts the different purpose the shoe serves in respondents' devices, as compared to the suit patent device. The principal purpose of the shoe in the accused devices is that the particular design thereof causes pulsations which tend to redistribute some of the fibers and fine particles in the web, or stock, thereby serving to improve the formation of the finished sheet. (Finding 38, above). This is in contradiction to the teachings of the suit patent which attempts to minimize any disturbances or pulsations as the wire sandwich passes over the shoe. (Finding 73). The lack of any effect from insertion of complainant's shoe in the top-wire Bel Roll indicates that a shoe of such design is only useful in a true twin-wire former, where it helps to shape a gradual entrance nip and serves as a primary dewatering device. (*Compare Findings* 23-28 with 29-61).

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[11] There is unsupported testimony that the modified Bel Roll does offer improvement over the standard Bel Roll (Roell, Tr. 678-79), but in the absence of support and, in view of the test embodied in RX-38, I cannot credit such testimony.

INFRINGEMENT OF THE '758 PATENT

Complainant has the burden of proving that the accused devices infringe the claims of the '758 patent. That burden requires proving that the accused devices include each and every element recited in the claims at issue. *Wolens* v. *F. W. Woolworth Co.*, 218 U.S.P.Q. 100 (7th Cir. 1983). *SSIH Equipment S.A.* v *U.S. International Trade Commission*, 218 U.S.P.Q. 679 (C.F.A.C. 1983); *Vekamaf Holland B.V.* v. *Pepe Benders Inc.*, 211 U.S.P.Q. 955 (D. Minn 1981). As noted in Findings 43-61, above, the evidence reveals that the accused devices lack at least two important elements recited in the claims of the '758 patent.

Nor can I find infringement under the doctrine of equivalents. As noted by complainant itself,

> Under the doctrine of equivalents, an accused product that does not literally infringe a structural claim may yet be found in infringement "*If it performs substantially the same function in substantially the way* to obtain the same result" as the claimed product or process.

Hughes Aircraft Co. v. *United States*, 19 U.S.P.Q. 473, 480 (C.A.F.C. 1983). (Emphasis added).

The record evidence herein shows that respondents' accused devices do not perform the same function in the same manner as the suit patent device. (Findings 69-75, above).

Since I find that there is no direct infringement, there can be no contributory or induced infringement.

COMPARATIVE ANALYSIS OF PETITIONS FOR WRITS OF CERTIORARI COMPLAINING OF *DE NOVO* FACT FINDING BY THE CIRCUIT COURTS OF APPEALS

Circuit	Total Petitions	Petitions on Point	% on Point
1st	107	0	0%
2nd	347	2	0.6%
3rd	334	4	1.2%
4th	231	3	1.3%
5th	397	7	1.8%
6th	320	3	0.9%
7th	292	4	1.4%
8th	204	6	2.9%
9th	574	4	0.7%
10th	143	1	0.7%
11th	353	2	0.6%
DC	175	0	0%
(All circuits combined, excluding CAFC)	3,447	36	1.0%
CAFC	92*	9*	9.8*

The data in this table was compiled using information from the Cases Docketed tables of *U.S. Law Week,* Section 3, Supreme Court Proceedings (hereinafter, *U.S. Law Week)* during the period Nov. 9, 1982 through March 12, 1985, which encompasses U.S.L.W. Vol. 51 No. 18 through Vol. 53 No. 35. The total number of Petitions for Writs of Certiorari emanating from each circuit court of appeals was noted for each issue of *U.S. Law Week* during this time period. Cumulative totals were compiled and all abstracts referencing "5 U.S.C. 706", "Rule 52(a)", "Appellate Fact Finding" or "Appellate Review" were noted. *U.S. Law Week* case summaries were then consulted for each noted case to determine the issues raised. Cases not summarized were checked by reviewing the Petitions for Certiorari on file in the Supreme Court. Cases on point were then tabulated to provide a circuit by circuit breakdown.

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* Includes this Petition